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Virtual Schools: Where's the Evidence?

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Virtual schools have the potential to improve student learning—but so far, research tells us little about how online instruction affects student performance.

In 1940, Dorothy Kundhardt created an interactive book for babies that combined images, words, and tactile activities. Her inspiration made *Pat the Bunny* the beloved first book for generations of infants and toddlers. Seventy-three years later, bunnies are still being patted, mirrors are still being peered into, and Paul and Judy can still play peek-a-boo with you. But they don't live only on a cardboard page anymore. Today's budding bibliophiles are just as likely to interact with the book on an iPad touch screen.

Clearly, cyberspace is no longer the exclusive domain of hyperconnected teenagers and adults. A quick search shows that iTunes alone boasts more than 3,000 apps designed for toddlers. The debate over whether virtual learning will play a role in schooling has thus been settled by the reality of preschoolers joining their older siblings as digital veterans. The expansion of virtual learning opportunities in school is inevitable.

Of course, technology has been a common presence in public schools for years. Computers have changed the teaching of research methods, writing, and mathematics. Across the world, there are many examples of innovative classrooms that prove technology's capacity to help students learn more and better. And distance education has expanded access to courses in rural and hard-to-staff schools.

Yet despite some notable successes, the overall impact of virtual instruction on student performance is largely unknown. What little information exists paints an inconsistent picture of both promise and peril. This poses a tremendous challenge for schools: How can they make sure they do virtual learning right?

The Push for Online Schooling

The shortage of good data has not stopped the political push for more virtual learning. According to the International Association for K–12 Online Learning (iNACOL), 40 states now have "significant" online learning policies, and 30 states plus the District of Columbia operate their own virtual schools. Five states—Alabama, Florida, Idaho, Michigan, and Virginia—require high school students to take at least one online course to graduate, and more states are expected to follow suit (iNACOL, 2012). In 2009–10, PreK–12 students took nearly two million courses online (Pape, 2012).

Nowhere has the growth been more dramatic than in full-time virtual schools. In 2011–12, virtual schools enrolled an

estimated 275,000 K–12 students, a 38 percent increase from just two years earlier (Watson, Murin, Vashaw, Gemin, & Rapp, 2012).

Virtual learning proponents represent a range of interests, but they share a goal to see the numbers grow even more. First and foremost are the education technology pioneers who recognize the potential of online learning to customize instruction to individual students. Alongside these experts are think tanks like Digital Learning Now, which is co-chaired by former governors Bob Wise and Jeb Bush, and the Alliance for Excellent Education. In addition to promoting the instructional advantages of online learning, these organizations also envision savings—gained through lower expenses for staffing and facilities—that, if realized, would be a gift to districts struggling to balance shrinking budgets without sacrificing instructional quality.

School choice and home school advocates, led by the American Legislative Exchange Council (ALEC), have also been busy in state capitals promoting virtual charter schools as a viable alternative to neighborhood public schools. ALEC has attracted particular attention recently for its influence drafting model legislation on various issues with funding from major corporations.

And parents overwhelmingly view technology as an important part of schooling. In a 2012 poll conducted in the United States, Germany, and China, 9 of 10 parents said they believed that technology would improve their children's ability to learn. At the same time, only one in three thought that students' technology needs were currently being met in school (Dell Corporation, 2012).

With all these advocates, who is left to argue *against* expanding online learning, or at least to express caution? At the risk of sounding like Luddites, my colleagues and I at the National School Boards Association's Center for Public Education have stepped into that role. In spring 2012, we looked at what research says about the effectiveness of online learning. We were alarmed by the paucity of data, especially given the heightened activity in state legislatures to expand these opportunities.[1]

The Lack of Data

We are not questioning the considerable *capacity* of virtual education to promote student learning. Moreover, our research did not examine the content of online courses and schools, which may be of high quality. Rather, we looked solely for hard evidence of virtual education's effects on student learning.

We were puzzled to discover that research tells us so little about online learning. Most of the studies that pointed to good student outcomes were small in scale and based on specific programs or products. Few provide data to help us understand whether online schooling is effective in general. And some of the most interesting data were collected and reported by news organizations rather than traditional researchers.

Research on Online Courses

More than one-half of U.S. school districts (55 percent) have some students enrolled in online courses (nearly all in high school). Students take online courses for many reasons. Credit recovery is the most common, accounting for 62 percent of online course-taking, followed by dual enrollment (47 percent) and advanced placement (29 percent) (Queen & Lewis, 2011).

The U.S. Department of Education's widely cited 2010 meta-analysis of the effects of online courses found a modest positive impact on participating students compared with their peers in traditional courses. The effect was greatest in blended courses, and fully online courses were as effective as face-to-face instruction. The study's findings, however, related mostly to postsecondary students. Of the 196 studies included, only seven addressed K–12 students; three of these showed positive effects in blended courses, one showed a negative impact, and three were inconclusive.

We also found some anecdotal evidence, however, that taking advanced placement, dual enrollment, or other high-level courses online in high school may produce good results. The Florida Department of Education shared some data, for example, showing that students who took these types of courses through the Florida Virtual School in 2011 outperformed the overall state averages by 12 percent and that their performance was equal to the global averages (T. Clow, Florida Virtual School, personal communication, May 16, 2012). Combined with post-secondary findings, these results suggest that student maturity and motivation are a factor in successful online learning.

Research on Full-Time Virtual Schools

Overall results for students enrolled in virtual schools full-time are also hard to come by. But the few reports and studies out there raise some red flags.

A report published by the National Education Policy Center (Miron, Urschel, Aguilar, & Dailey, 2012) provides a glimpse of virtual school performance. The researchers analyzed the adequate yearly progress (AYP) results for both brick-and-mortar and virtual charter schools operated by for-profit education management organizations (EMOs). They found that 27 percent of EMO-operated virtual schools met AYP in 2010–11, compared with 51 percent of EMO-run brick-and-mortar schools. The national average for all schools that year was estimated at 49 percent

(Usher, 2012). However, the report did not control for student populations. It's possible that virtual schools tend to serve students who were already struggling in traditional schools.

Researchers at the Center for Research on Education Outcomes (CREDO) at Stanford University (2011) mitigated this problem by developing a methodology enabling them to compare students' performance in charter schools with performance in the traditional schools they would have otherwise attended. CREDO analyzed student performance in Pennsylvania schools, including eight full-time virtual schools, from 2007 to 2010. In every case, students in the virtual charter school performed worse than their counterparts in the traditional school.

Evidence in other states is equally dismal. An audit in Minnesota found that students enrolled full-time in online schools were more likely to drop out than their peers; they also made fewer math gains, although reading results were mixed (Minnesota Office of the Legislative Auditor, 2011). Of 27 virtual schools in Ohio, only three met or exceeded the state's benchmarks for "effective" (Tucker, Dillon, & Jambulapati, 2011). A Colorado news organization (Hubbard & Mitchell, 2011) reported students moving in and out of online schools and posting lower scores when they returned to the neighborhood school. That article also documented that over four years, online student scores averaged 14 to 26 percentage points lower than the state average.

Full-time virtual schools serve a real need for certain students. Some children are physically unable to attend school; others may have special circumstances like work or athletic schedules that make online instruction a better option. But these research findings indicate that for many students who choose to go virtual, something in the delivery is not working as it should.

When Online Learning Works Well

Researchers at the University of Arkansas (Rittner, 2012) recently compared the performance of students in the Arkansas Virtual Academy School (AVAS) with that of their counterparts in traditional schools. The Academy students in grades 3–8 produced higher gains over two years than did their traditionally schooled peers: an average of 9.6 percentile points in math and 3.6 points in literacy. Economically disadvantaged Academy students did particularly well. The study does not address possible reasons for these results. But given the young age of the Academy students, it's easy to infer that adult supervision is present and is a factor.

The nonprofit Rocketship Education, a well-known national charter school network, has earned well-deserved attention as a model for blended learning. A recent independent evaluation (Wang & Woodworth, 2011) compared Rocketship students in kindergarten and grade 1 with their peers in traditional schools. Over a 16-week period, the Rocketship students produced gains equivalent to 5.5 percentile points in math. That's huge.

Monitoring, Accountability, and Relationships

The U.S. Department of Education's 2010 meta-analysis concluded that for postsecondary students, online learning can be more effective than traditional instruction. And examples of innovative programs have shown that similar results can be produced in K–12. So why aren't we seeing these benefits in meaningful numbers?

There are some clues. The need for a strong, supportive infrastructure is one. A particular set of survey answers stood out: Of the districts that offer online learning to their students, only 70 percent monitor attendance, 56 percent monitor students' login activity, and 49 percent track time spent online (Queen & Lewis, 2011). It's hard to imagine a traditional school paying so little attention to student attendance and activity.

In fact, we found that data collection overall was lacking. It seemed relatively easy for students to get lost in the system—especially when they moved back and forth between traditional schools and outside providers. We believe that states and districts need much better structures and staff in place to monitor online students and make sure they are staying on track. States and districts also need to measure the effect of the online programs overall and hold the programs accountable.

Finally, we shouldn't underestimate the importance of adult relationships to support student learning from the earliest grades through adolescence. Adult interaction is an essential part of Rocketship's blended approach and is a likely element of the Arkansas Virtual Academy. In contrast, the low graduation rates for older students in many full-time virtual schools strongly suggest that we may be letting many kids loose in cyberspace without a safety line.

Toddlers' first literary encounters today may be digital instead of with printed books. But such encounters don't replace what children also need and get when they experience *Pat the Bunny* alongside a caring adult. When these adult relationships continue in school, they help our children through their long process toward independence.

Online learning has a central place in the education we provide all students. But we must also make sure that we support students through this journey until we finally let them go at graduation well-prepared for their next steps, wherever those steps may lead.

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Endnote

[1] *The full text of the Center for Public Education's 2012 report, Searching for the Reality of Virtual Schools, is available on the center's website.*

Patte Barth is director of the Center for Public Education, an initiative of the National School Boards Association.

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